REMARKS

Applicants thank the Examiner for total consideration given the present application. Claims 1-22 are currently pending. Claims 1, 7, 13, 14, 17, and 18 are independent. Applicants respectfully request reconsideration of the rejected claims in light of the remarks presented herein, and earnestly seek timely allowance of all pending claims.

35 U.S.C. § 102 REJECTION – Noridomi

Claims 1-4, 6, 13, and 17-22 are rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Noridomi et al. (U.S. Patent Publication No. 2003/0210784 A1)[hereinafter "Noridomi"]. Applicants respectfully traverse this rejection.

For a Section 102 rejection to be proper, the cited reference must teach or suggest each and every claimed element. *See M.P.E.P. 2131; M.P.E.P. 706.02.* Thus, if the cited reference fails to teach or suggest one or more elements, then the rejection is improper and must be withdrawn.

In this instance, Noridomi fails to teach or suggest each and every claimed element.

For example, independent claim 1 recites, *inter alia*, "an embedding step of ***producing a variation*** between the pixel values of said ***adaptive pixels*** in one of said plurality of image regions and those of said ***adaptive pixels*** in an adjacent one of said plurality of image regions, and ***varying the pixel values of said adaptive pixels of said plurality of image regions in a time direction***, ***according to a value of an embedded bit set of an electronic watermark***, and of generating an electronic-watermark-embedded image by ***making the variation in the pixel values of said adaptive pixels vary step by step at a boundary between the two of said plurality of image regions and in the time direction*** so that the variation makes a slow transition." *Emphasis added.*

It is respectfully submitted that Noridomi fails to teach or suggest the above-identified "embedding step" as recited in claim 1.

In response to Applicant's previously filed arguments, the Examiner states, "*Applicants are reminded that the Examiner is entitled to give the broadest reasonable interpretation to the language of the claims. So the Examiner considers "characteristic amount" to be Applicants'*

"adaptive pixels" within the broad meaning of the term . . . Examiner is not limited to Applicants' definition which is not specifically set forth in the claims." (*See Section 7 bridging pages 4 and 5 of the final Office Action.*) It is respectfully submitted that Examiner's such argument/allegation is not germane.

First, the Examiner appears to be confusing regarding her understanding of the entitlement to give the broadest reasonable interpretation to the language of a claim. Applicant respectfully submits that the broadest reasonable interpretation of the claims must also be consistent with the interpretation that those skilled in the art would reach. *In re Cortright*, 165 F.3d 1353, 1359, 49 USPQ2d 1464, 1468 (Fed. Cir. 1999). It is respectfully submitted that those skilled in the art would not reach that mere presence of a word "characteristic amount" would teach the claimed "adaptive pixels".

Applicants do not disagree that an Examiner is entitled to give the broadest reasonable interpretation to the language of a claim. In this instance, "characteristic amount" is a broader term than "adaptive pixels". If Applicants' claim recited the term "characteristic amount", it may be true that "adaptive pixels" could read on such term if the broadest reasonable interpretation is given to the term "characteristic amount". In the instant application, however, Applicants' claim ***does not*** recite "characteristic amount", rather recites "adaptive pixels".

Second, the Examiner's statement, "*Applicants' definition which is not specifically set forth in the claims*" is totally erroneous. The definition of the term "adaptive pixels" has been specifically set forth in independent claims 1, 13, and 17 as being "***pixels that have a property of being difficult to visually recognize a variation in a pixel value from each of the plurality of image regions***." The Examiner is totally ignoring such element of claims 1, 13, and 17. It is respectfully submitted that Norimodi fails to teach or suggest that "characteristic amount" corresponds to pixels that have a property of being difficult to visually recognize a variation in a pixel value from each of the plurality of image regions. Rather, as correctly identified by the Examiner, "characteristic amount" refers to a value calculated on the basis of pixel values in an image at a certain area thereof wherein the certain area of the image is made up of plural pixels. (*See paragraph [0051].*) Norimodi continues to disclose that "characteristic amount" may include a sum of luminance values in the image at the certain area thereof, an average of

luminance components in the image at the certain area thereof, a sum of differential absolute values of horizontally neighboring pixels in the image at the certain area thereof, and a sum of differential absolute values of vertically neighboring pixels in the image at the certain area thereof. That is, the characteristic amount may be any one of them, or a combination of them. (*See paragraph [0052].*)

Thus, at least for the foregoing, it is evident that "characteristic amount" of Noridomi cannot be reasonably interpreted as "adaptive pixels" that have a property of being difficult to visually recognize a variation in a pixel value from each of the plurality of image regions.

The Examiner further states, "*Noridomi teaches varying adaptive pixels at a boundary between image regions by firstly teaching adaptive pixels at a boundary through "calculating and retaining a characteristic amount for each image regions . . . It is inherent that in order to produce local regions, the area-dividing unit would create boundaries, and the "characteristic amount" is based on the pixel values within these regions, including the pixels located at those boundaries.*" (*See Section 9, page 5 of the final Office Action.*)

First, as demonstrated above, "characteristic amount" of Noridomi cannot be reasonably interpreted as "adaptive pixels" that have a property of being difficult to visually recognize a variation in a pixel value from each of the plurality of image regions. Thus, it is respectfully submitted that Noridomi ***cannot*** teach ***varying adaptive pixels at a boundary between image regions***.

Second, the fact that a certain result or characteristic ***may*** occur or be present in the prior art is ***not sufficient*** to establish the inherency of that result of characteristic. In relying upon the theory of inherency, the Examiner ***must demonstrate*** that the allegedly inherent characteristic ***necessarily*** flows from the teachings of the applied prior art. *See M.P.E.P. 2112.* In this instance, it is respectfully submitted that although Noridomi discloses a characteristic amount calculating unit 501 that calculates a characteristic amount for each of the local regions divided by an area-dividing unit 504, such characteristic amount calculating unit 501 does not inherently ***varies adaptive pixels at a boundary between image regions*** as recited in the claimed invention.

As previously submitted, Noridomi discloses a conventional digital watermark-embedding method and apparatus that first calculates and retains a characteristic amount from an

entered video signal by utilizing a characteristic amount calculating unit 101 and a characteristic amount retaining unit 102, respectively. Then, embedment intensity is calculated and retained by an embedment intensity calculating unit 103 and an embedment intensity retaining unit 104, respectively. Then, embedment information is embedded by a digital watermark embedding unit 105 as digital watermarks into the entered video signal in accordance with the retained embedment intensity of the previous frame or field that is located at a position earlier in time than a target image subject to digital watermark embedment. Finally, an output video signal having the digital watermarks embedded therein is produced. (*See Figs. 1 and 5.*)

As mentioned above, Noridomi discloses that the "characteristic amount" may refer to a value calculated on the basis of "pixel" values in an image at a certain area wherein the certain are is made up of "plural pixels". (*See paragraph [0051].*)

Noridomi is distinguished from the claimed invention in that the digital watermark embedding unit 105 does not produce a variation between pixel values of ***adaptive pixels*** in one of the plurality of image regions and those of the adaptive pixels in an adjacent one of the plurality of image regions, and does not ***varies*** the pixel values ***of the adaptive pixels*** of the plurality of image regions in a time direction, according to a value of an embedded bit set of an electronic watermark. According to the claimed invention, adaptive pixels are pixels that have a property of being difficult to visually recognize a variation in a pixel value from each of the plurality of image regions. Nowhere does Noridomi mentions that each of the "plural pixels" has a property of being difficult to visually recognize a variation in a pixel value from each of the plurality of image regions as recited in the claimed invention.

Further, although Noridomi discloses that the "characteristic amount" may refer to a value calculated on the basis of "pixel" values in an image at a certain area, nowhere does Noridomi teach or suggest that the output video signal is generated by making ***variation*** in the plural pixel values of the adaptive pixels ***vary step by step at a boundary between the two of the plurality of image regions*** and in the time direction. Rather, Noridomi merely teaches that the output from the embedment intensity retaining unit 104 is combined with embedment information and the entered video signal to output the video signal with digital watermarks embedded therein.

The Examiner again appears to suggest that paragraphs [0101]-[0103], [0123]-[0131], and Figs. 5-8 of Noridomi discloses the above-identified claim feature. Indeed, the Examiner merely states, "when a region is embedded, every pixel including the pixels at the boundary in the region are modified; the embedding is done pixel by pixel (step by step) and suppressed degradation is a slow transition in time direction." *See Office Action, section 9, page 10, 1st paragraph.*

Upon careful review of the above-identified sections of Noridomi, Applicants find no teaching or suggestion that the output video signal is generated by making ***variation*** in the plural pixel values of the adaptive pixels ***vary step by step at a boundary between the two of the plurality of image regions*** and in the time direction. Indeed, the entire reference is silent on a boundary between two image regions, let alone varying adaptive pixels at a boundary between the two image regions. Examiner's mere conclusion that when a region is embedded, every pixel including the pixels at the boundary in the region are modified is not sufficient to establish a *prima facie* anticipation of the claim.

More specifically, referring to paragraphs [0101]-[0140] in Noridomi, third embodiment discloses that one image is divided to a plurality of local regions, and a characteristic amount ***for each of the local regions*** is calculated and retained. However, Noridomi does not compare the characteristic amounts between the local regions. In addition, although Noridomi calculates embedment intensity ***for each of the local regions***, does not compare the embedment intensity between the local regions.

Furthermore, fourth embodiment in Noridomi discloses that a difference value in characteristic amounts not between the local regions but between two selected images ***in front and behind with respect to a time axis***, is calculated. Also, a difference value which is compared with a threshold in paragraph [0136] is the difference value in the characteristic amounts between the two selected images ***in front and behind with respect to the time axis***.

Therefore, Noridomi does not disclose comparing pixel values (characteristic amounts) between image regions, much less "producing a variation between the pixel values of said adaptive pixels in one of said plurality of image regions and those of said adaptive pixels in an adjacent one of said plurality of image regions" as described in claim 1. Thereby, it is also clear

that Noridomi does not intend the variation makes slow transition ***at a boundary between the mage regions***, at all.

Therefore, for at least these reasons, independent claim 1 is distinguishable from Noridomi. Claims 2-4, 6, and 21-22 depend from claim 1, directly or indirectly. Therefore, for at least the reasons stated with respect to claim 1 and further in view of novel features recited therein, claims 2-4, 6, and 21-22 are also distinguishable from Noridomi. For example, with respect to claim 2, the entire reference is silent on any "***phase polarity***", let alone "the pixel values of said adaptive pixels in said one of the plurality of image regions have a phase polarity different from those of said adaptive pixels in the adjacent one of said plurality of image regions". The Examiner again alleges that the broadest reasonable interpretation of the term "characteristic amount" would encompass the term "phase polarity" as recite in the claimed invention. It is respectfully submitted that the Examiner's such allegation is totally erroneous at least for the reasons set forth above with respect to the term "adaptive pixels".

Independent claims 13 and 17 recite, *inter alia*, "an embedding processing unit for ***varying*** the pixel values of said electronic image on the basis of said electronic watermark information, and for generating an electronic-watermark-embedded image by ***making the variation in the pixel values of said adaptive pixels vary step by step at a boundary between the two of said plurality of image regions*** and in the time direction so that the variation makes a slow transition."

At least for the same reasons stated with respect to claim 1 above, it is respectfully submitted that Noridomi fails to teach or suggest the above-identified feature of independent claims 13 and 17.

It is again noted that although the Examiner includes claims 18-20 in this anticipation rejection, no analyses of how Noridomi anticipates these claims have been provided by the Examiner. Thus, it is understood that inclusion of claims 18-20 in this rejection is merely a typographical error committed by the Examiner.

Therefore, for at least the above reasons, it is respectfully requested to withdraw the rejection of claims 1-4, 6, 13, and 17-22, based on Noridomi.

35 U.S.C. § 103 REJECTION – Noridomi, Oostveen

Claim 5 is rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Noridomi, in view of admitted prior art.

Claims 7-12, 14-16, and 18-20 are rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Noridomi, in view of Oostveen et al. (WIPO Publication No. WO 03/055222 A2)[hereinafter "Oostveen"].

Applicants respectfully traverse these rejections.

Applicants respectfully submit that the Examiner has failed to establish a *prima facie* case of obviousness. To establish a *prima facie* case of obviousness, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Additionally, there must be a reason why one of ordinary skill in the art would modify the reference or combine reference teachings to obtain the invention. A patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art. *KSR Int'l Co. v Teleflex Inc.*, 82 USPQ2d 1385 (U.S. 2007). There must be a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does. *Id.* The Supreme Court of the United States has recently held that the "teaching, suggestion, motivation test" is a valid test for obviousness, albeit one which cannot be too rigidly applied. *Id.* Rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. *Id.*

In regard to claim 5, it is respectfully submitted that this claim is distinguished from the applied prior art references at least by virtue of its dependency on claim 1 and further in view of novel features recited therein.

Independent claim 7 recites, *inter alia*, "An electronic watermark detecting method . . . producing a ***variation between pixel values*** in one of said plurality of image regions and those in an adjacent one of said plurality of image regions, and ***varying the pixel values of said adaptive pixels of said plurality of image regions in a time direction*** according to a value of the

embedded bit set . . . detecting ***a correlation value*** showing ***a correlation between a pattern of the pixel value variation*** in the time direction ***which is produced between the pixel values*** in the one of said plurality of image regions ***and those in the adjacent one of said plurality of image regions***, which is caused by the electronic watermark to be embedded in said electronic image from which the electronic watermark is to be detected, ***and*** a pattern of the pixel value variation in the time direction of the one of said plurality of image regions of said electronic image from which the electronic watermark is to be detected . . . ."

Independent claim 14 recites, *inter alia*, "An electronic watermark detecting apparatus" and independent claim 18 recites, *inter alia*, "A computer readable medium" both of which include the above-identified claim feature of claim 7.

For at least for the same reasons stated with respect to claim 1 above, it is respectfully submitted that Noridomi fails to teach or suggest the above-identified feature of claims 7, 14 and 18 corresponding to the subject matter of "adaptive pixels" and the step, structure, or program code for "varying" the pixel values of the adaptive pixels.

Further, it is respectfully submitted that the imported reference, Oostveen, fails to fulfill the deficiency of Noridomi with respect to the subject matter of detection of a "correlation value".

Oostveen merely discloses a conventional apparatus and corresponding method in which a watermark pattern is embedded with a "payload" in a time dependent information signal. Oostveen's embedding method includes the following three steps: i) determining a number of robust signatures; ii) creating a payload; and iii) embedding the watermark pattern according to the payload in the information signal.

It is respectfully submitted that none of the above-identified steps of Oostveen teach or suggest a step or structure for detecting a correlation value as recited in claims 7, 14, and 18. According to the claimed invention, the detected ***correlation value*** shows ***a correlation between a pattern of the pixel value variation*** in the time direction ***which is produced between the pixel values*** in the one of said plurality of image regions ***and those in the adjacent one of said plurality of image regions***, which is caused by the electronic watermark to be embedded in the electronic image from which the electronic watermark is to be detected, ***and*** a pattern of the

pixel value variation in the time direction of the one of the plurality of image regions of the electronic image from which the electronic watermark is to be detected. Oostveen simply fails to teach or suggest the above-identified claim feature.

The Examiner again points to corresponding descriptions of Figs. 2 and 3 of Oostveen as disclosing the above-identified feature of claims 7, 14, and 18. The relied upon sections merely disclose how "robust signatures" are detected and how the "payload" is extracted. None of these steps teach or suggest the above-identified "correlation detection" step or structure of the claimed invention.

Oostveen discloses that by using a robust signature S (a set of variables that is representative of essentials of a host signal), a payload (a bit stream embedded/detected based on a watermark) which depends on the signature S is extracted.

However, Oostveen does not show "***correlation between payload and signature value***" as stated by the examiner in the Final Office Action, page 24, the last sentence. Since the signatures Si to Sn are embedded in a predefined time interval, the payload corresponding to the signature can be detected by using the only interval information. That is, ***there is no need to detect the correlation between the payload and the signature value***. (*Please see Oostveen, page 5, lines 20-26; Fig.3.*)

Therefore, Oostveen does not disclose "detecting a correlation value showing a correlation between a pattern of the pixel value variation in the time direction which is produced between the pixel values in the one of said plurality of image regions and those in the adjacent one of said plurality of image regions, which is caused by the electronic watermark to be embedded in said electronic image from which the electronic watermark is to be detected, and a pattern of the pixel value variation in the time direction of the one of said plurality of image regions of said electronic image from which the electronic watermark is to be detected" as recited in claims 7, 14, and 18, at all.

If this rejection is maintained, a detailed explanation by the Examiner is respectfully requested.

Therefore, for at least these reasons, independent claims 7, 14, and 18 are distinguishable from Noridomi and Oostveen. Claims 15-16 and 19-20 are distinguishable from Noridomi and Oostveen at least by virtue of their dependency on corresponding independent claim.

CONCLUSION

All rejections raised in the Office Action having been addressed, it is respectfully submitted that the present application is in condition for allowance. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Ali M. Imam Reg. No. 58,755 at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

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